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Daniel Zauner

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EXAMINER

JENNISON, BRIAN W

ART UNIT

PAPER NUMBER

3742

MAIL DATE

DELIVERY MODE

01/06/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/526,989	Applicant(s) ZAUNER ET AL.	
	Examiner BRIAN JENNISON	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

The amendment filed 9/25/2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: From claim 1: "wherein the topographical change protrudes from the coated surface a height sufficient to provide a spacing gap between the coated surface on which the topographical change was formed and a sheet to which the coated sheet is to be welded sufficient to prevent explosive vaporization of the coating material when the coated sheet is welded to the second sheet." Explosive vaporization of the coating material is stated in the abstract and paragraph [0004] of the specification however, it is never stated that the protrusion is sufficient to prevent explosive vaporization.

In Claim 7: "to stop when the topographical change protrudes from the sheet." It is never stated in the original specification that this is how the melting is controlled. "which senses the formation of the protrusion." It is never stated in the original specification that the formation of the protrusion, only that the machining time is regulated. "in response to the detection of the protrusion." It is never stated in the original specification that anything is done in response to the detection of the protrusion nor is it suggested that a protrusion is detected. The processing time is pre-specified and depth of the penetration is based off a time period.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. From claim 1: "wherein the topographical change protrudes from the coated surface a height sufficient to provide a spacing gap between the coated surface on which the topographical change was formed and a sheet to which the coated sheet is to be welded sufficient to prevent explosive vaporization of the coating material when the coated sheet is welded to the second sheet." Explosive vaporization of the coating material is stated in the abstract and paragraph [0004] of the specification however, it is never stated that the protrusion is sufficient to prevent explosive vaporization.

In Claim 7: "to stop when the topographical change protrudes from the sheet." It is never stated in the original specification that this is how the melting is controlled.

"which senses the formation of the protrusion." It is never stated in the original specification that the formation of the protrusion, only that the machining time is regulated. "in response to the detection of the protrusion." It is never stated in the original specification that anything is done in response to the detection of the protrusion

Art Unit: 3742

nor is it suggested that a protrusion is detected. The processing time is pre-specified and depth of the penetration is based off a time period.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 2, there is insufficient antecedent basis for, "the focal area" recited at line 3.

3. **Claims 1, 3-6 rejected under 35 U.S.C. 102(b) as being anticipated by FUJIMOTO et al (JP 2002-178178 A cited by applicant) as evidence by Dunskey et al (US 2001/0045419).**

Fujimoto et al teaches (re claim 1, 3 and 6) a laser lap welding method in which a protrusion 2a is formed, by melting, on the surface of sheet 2 facing away from laser 1. (See Drawing 1 and Paragraphs [0018]—[0020]) only one sheet is claimed in claim 1. The coated sheet 2 has first and second surfaces, as do all sheets, near a laser 1 where one surface faces the laser and the other faces away. **See drawing 1.** The topographical change in drawing 1 on the first sheet is formed due to melting from the laser. The penetration depth is 95% and since the protrusion 2a is due to melting the laser will melt through to the surface facing away from the laser. **See Paragraph**

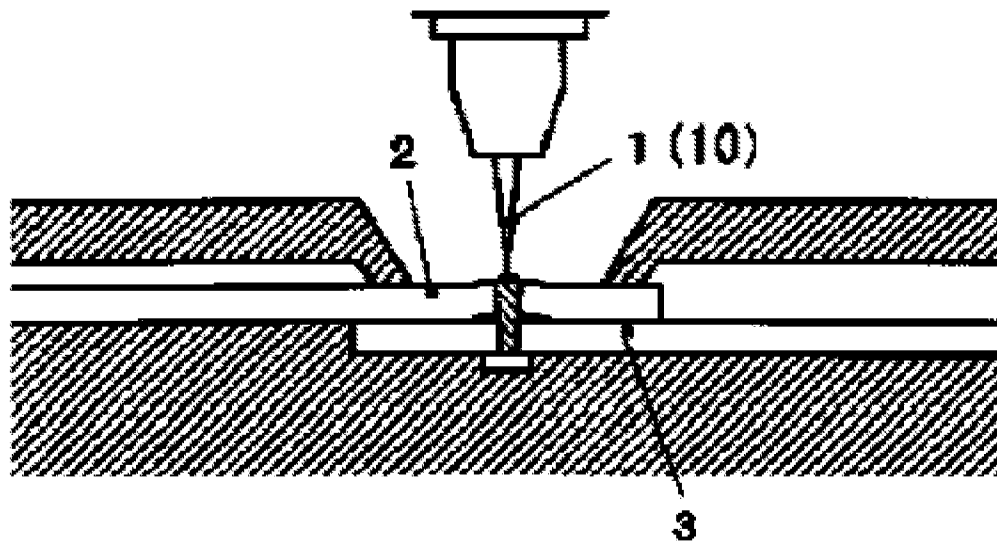
Art Unit: 3742

[0022]. (re claim 3) the protrusion on the side facing away from the laser is welded to a second sheet so that the zinc vapor can escape through the gap formed by the protrusion. This is clearly stated in Fujimoto as the reason for the protrusion and preventing explosive vaporization is an intrinsic characteristic of letting any vapor escape through a gap and it is stated that the height of the protrusion may be increased. (See Drawing 2 and Paragraphs [0021]-[0024]) (re claims 3 and 4) the sheets 2 and 3 are fused together by welding which is performed by a second laser so the weld line is the same line as protrusion 2a. (See Paragraph [0026]).

Regarding Claims 1 and 3: The laser describes about the center of its machining area in a narrowing spiral. (This is merely an inherent characteristic shown by Dunskey et al (US 2001/0045419) See Figs. 21, 22, 32. which all show a narrowing spiral weld pattern.) The narrowing spiral limitation of claims 1 and 3 is merely a design choice and it is well known in the art that the laser can be moved in a narrowing spiral during machining or welding.

Regarding Claim 5, Fujimoto et al teaches a protrusion on the side facing the laser and the side facing away from the laser as shown in drawing 3.

[Drawing 3]



Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto et al in view of Milewski et al (US Patent No. 5,760,365).**

The teachings of Fujimoto et al have been discussed above.

Fujimoto et al fails to teach (re claim 2) the method in claim 1 wherein the laser beam is not focused upon the surface.

Milewski et al teaches (re claim 2) "The changes in focal position shown in Table 3 were modeled for the V-groove weld joint geometry shown in FIGS. 9A, 9B and 9C. In these simulations the focal spot size was smaller than the joint gap at the surface having focus depths of 0.00", 0.05" and 0.10", respectively. (See column 12, lines 20-25) The area to be irradiated is 2mm, which is much greater than the focus depth. (See Column 5, Lines 30-45 "Focusing above the surface of the aluminum part" (See column 12, lines 33-34)

In view of Milewski et al's teachings it would have been obvious to one of ordinary skill in the art at the time of the invention to focus the laser beam at a point other than at the surface of the material to melt one side of the material, since it is known in the art to defocus the laser beam in an analogous process for the same purpose.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujimoto as evidence by Dunskey et al (US 2001/0045419) in view of Leong et al (US Patent No. 6,329,635).

Art Unit: 3742

Fujimoto et al as evidence by Dunskey et al discloses substantially all features of the claimed invention as set forth above except for the-melting through is controlled by pre-specifying a processing time or by providing a penetration sensor which regulates the laser machining time.

Leong et al teaches a method for weld and laser heat treatment monitoring which involves determining depth penetration wherein the machining time can be controlled in term of a calibration curve. Where in order to-determine weld penetration from the weld monitor signal, a calibration curve is required. This curve can be constructed for a particular component from test welds made by varying the laser power level at constant speed. Defects are often caused by changes in beam power and part geometry rather than speed. After sectioning and polishing, the weld penetration can be measured and correlated with the DC signal from the weld monitor. Using the design specifications for the component of interest, upper and lower control limits could be determined for process monitoring as set forth at column 9, lines 33-43). The weld penetration is therefore sensed and monitored and stopped.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize in Fujimoto et al as evidence by Dunskey et al, the calibration curve to pre-specify the processing time as taught by Leong et al in order to control the melting through the object or sheet depend upon the laser power level, speed, geometry, or design specifications if so desired.

Response to Arguments

7. Applicant's arguments, see page 1 of the reply, filed 9/25/2009, with respect to Claims 1 and 7 have been fully considered and are persuasive. The 112 2nd paragraph rejection of claims 1 and 7 has been withdrawn.

8. Applicant's arguments filed 9/25/2009 have been fully considered but they are not persuasive. See remarks below. New claim limitations have been addressed above.

In regards to applicant's argument on page 6 of the reply that Fujimoto does not teach the material is melted through on the side facing away from the laser, the examiner respectfully disagrees. Paragraph [0022] states that the penetration depth is 95% of the sheet depth and the penetration is a result of the melting of the sheet therefore, the sheet is melted through since the side facing away from the laser must get hot enough to melt for the protrusion 2a to form. The reason for the formation of the gap is also addressed in Fujimoto. The gap is formed to allow zinc vapor to escape which has an intrinsic quality of preventing explosive vaporization. Furthermore, the specification does not provide for the height being sufficient enough to prevent explosive vaporization.

In regards to applicant's argument on pages 7-8 of the reply that Fujimoto does not inherently teach the narrowing spiral technique the Examiner respectfully disagrees. The matter of the narrowing spiral is not an unconventional technique since it is taught by Dunsky. The movement of the laser is merely a design choice and it is known in the art to move the laser in various patterns such as a narrowing spiral.

9. In response to applicant's arguments on pages 8-9, in regards to Dunskey teaching the topographical changes, against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

10. Applicant's arguments, on pages 9-10 fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 3742

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN JENNISON whose telephone number is (571)270-5930. The examiner can normally be reached on M-Th 7:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN JENNISON/
Examiner, Art Unit 3742

/Henry Yuen/
Supervisory Patent Examiner, Art
Unit 3700

12/23/2009